

Please provide the following information, and submit to the NOAA DM Plan Repository.

Reference to Master DM Plan (if applicable)

As stated in Section IV, Requirement 1.3, DM Plans may be hierarchical. If this DM Plan inherits provisions from a higher-level DM Plan already submitted to the Repository, then this more-specific Plan only needs to provide information that differs from what was provided in the Master DM Plan.

URL of higher-level DM Plan (if any) as submitted to DM Plan Repository:

1. General Description of Data to be Managed**1.1. Name of the Data, data collection Project, or data-producing Program:**

2017 USGS Lidar: Chenier Plain, LA

1.2. Summary description of the data:

Product: Classified LAS, was filtered and manually edited to achieve a clean Bare Earth surface. This Classified LAS v1.4 data set was used to create; hydro-flattened breaklines, hydro-flattened Bare Earth DEMs, Digital Surface Models, and Intensity Images.

Geographic Extent: AOI was located along an area of coastal Louisiana referred to as Chenier Plain, which includes portions of Calcasieu, Cameron, Vermillion, Iberia, and St. Mary Parishes. The area of interest covered approximately 2942 square miles. Dataset Description: LA Chenier Plain Lidar 2017 B16 project called for the planning, acquisition, processing and derivative products of lidar data to be collected at a nominal pulse spacing (NPS) of 0.70 meter. Project specifications are based on the U.S. Geological Survey National Geospatial Program Lidar Base Specification, Version 1.2. The data was developed based on a horizontal projection/datum of NAD83 (2011), UTM Zone 15N, Meter and vertical datum of NAVD88 (GEOID12B), Meter. Lidar data was delivered as: flightline-extent raw LAS v1.4 swaths, classified point cloud LAS v1.4 files formatted to 3817 individual 1,500 m x 1,500 m tiles in NAD83 (2011), UTM Zone 15N, Meter. Derivatives were produced as tiled; Bare Earth Surface DEMs, Digital Surface Models, Intensity Images; all tiled to the same 1,500 m x 1,500 m schema.

Ground conditions: Lidar was collected in Winter of 2017 by Aerial Services, Inc. (ASI), and WOOLPERT. The Chenier Plain Wetland areas contain hundreds of impoundments related to aquaculture operations. These fields are flooded and contained within the impoundments on a semi-permanent basis, including during the Chenier Plain lidar acquisition timeframe. This is an understood and accepted acquisition condition. Furthermore, impoundments equal to or greater than 2 acres are treated as hydrologically flattened features within the data deliverables. Tidal Restriction: The following tide gauges were considered suitable for prediction of regional water levels within the AOI; Sabin Pass North, TX NOS (8770570), Calcasieu Pass, LA NOS (8768094), Freshwater Canal Locks, LA NOS (8766072), and Amerada Pass, LA NOS (8764227). Water levels at flight time shall were below -0.10 meters (mean seal level) for the

Calcasieu Pass, LA tide gauge (8768094) in the west and -0.10 meters (mean seal level) for the Amerada Pass, LA tide gauge (8764227). Meteorological: Acquisition did not occur after passage of a moderate to strong high-pressure system generating northerly winds in excess of five (5) knots. In addition, it is noted switching of winds from WNW to ENE is a tipping point for switching from wind driven marsh drainage to marsh flooding. Ground Conditions: Within the extreme eastern AOI (swamp and fresh to intermediate marsh occurring northeast of Marsh Island and bordering East Cote Blanche Bay) Lidar was not acquired when the Lower Atchafalaya River stage was less than 4 feet as determined by the latest measurements taken at gauge (USGS 07381605) at Morgan City.

Lidar was not acquired when regional precipitation driven flooding occurred in local rivers with significant impact to wetland impoundments located throughout the entire Chenier Plain west of Cote Blanch Bay. The following local rivers shall be monitored for flood conditions; Vermillion, Mermentau, Calcasieu, and Sabine rivers. In order to post process the lidar data to meet task order specifications and meet ASPRS vertical accuracy guidelines, Woolpert established a total of 68 ground control points that were used to calibrate the lidar to known ground locations established throughout the project area. Additional independent accuracy checkpoints were collected (94 NVA points and 75 VVA points) and used to assess the vertical accuracy of the data. These checkpoints were not used to calibrate or post process the data.

The NOAA Office for Coastal Management (OCM) downloaded 3817 LA_ChenierPlain_2017 laz files from this USGS site: <ftp://rockyft...>

1.3. Is this a one-time data collection, or an ongoing series of measurements?

One-time data collection

1.4. Actual or planned temporal coverage of the data:

2017-01-08 to 2017-03-03

1.5. Actual or planned geographic coverage of the data:

W: -93.911758, E: -91.36852, N: 30.127569, S: 29.461987

1.6. Type(s) of data:

(e.g., digital numeric data, imagery, photographs, video, audio, database, tabular data, etc.)

Lidar Point Cloud

1.7. Data collection method(s):

(e.g., satellite, airplane, unmanned aerial system, radar, weather station, moored buoy, research vessel, autonomous underwater vehicle, animal tagging, manual surveys, enforcement activities, numerical model, etc.)

1.8. If data are from a NOAA Observing System of Record, indicate name of system:

1.8.1. If data are from another observing system, please specify:

2. Point of Contact for this Data Management Plan (author or maintainer)**2.1. Name:**

NOAA Office for Coastal Management (NOAA/OCM)

2.2. Title:

Metadata Contact

2.3. Affiliation or facility:

NOAA Office for Coastal Management (NOAA/OCM)

2.4. E-mail address:

coastal.info@noaa.gov

2.5. Phone number:

(843) 740-1202

3. Responsible Party for Data Management

Program Managers, or their designee, shall be responsible for assuring the proper management of the data produced by their Program. Please indicate the responsible party below.

3.1. Name:**3.2. Title:**

Data Steward

4. Resources

Programs must identify resources within their own budget for managing the data they produce.

4.1. Have resources for management of these data been identified?**4.2. Approximate percentage of the budget for these data devoted to data management (specify percentage or "unknown"):****5. Data Lineage and Quality**

NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates.

5.1. Processing workflow of the data from collection or acquisition to making it publicly accessible

(describe or provide URL of description):

Process Steps:

- 2017-01-08 00:00:00 - Using the Leica Lidar sensors, high density data, at a nominal pulse spacing (NPS) of 0.7 meters, were collected for this task order. Specific

information regarding latitude, longitude, and ellipsoid height to the L1 phase center is included in the lidar processing report. LA Chenier Plain Lidar 2017 B16 Lidar task order was processed and delivered in NAD 1983(2011) UTM Zone 15N, NAVD88 Meter. The geoid used to reduce satellite derived elevations to orthometric heights was GEOID12B. Once the data acquisition and GPS processing phases are complete, the lidar data was processed immediately to verify the coverage had no voids. The GPS and IMU data was post processed using differential and Kalman filter algorithms to derive a best estimate of trajectory. The quality of the solution was verified to be consistent with the accuracy requirements of the project. The SBET was used to reduce the lidar slant range measurements to a raw reflective surface for each flight line. The coverage was classified to extract a bare earth digital elevation model (DEM) and separate last returns. The ALS calibration and system performance is verified on a periodic basis using the calibration range. The calibration range consists of a large building and runway. The edges of the building and control points along the runway have been located using conventional survey methods. Inertial measurement unit (IMU) misalignment angles and horizontal accuracy are calculated by comparing the position of the building edges between opposing flight lines. The scanner scale factor and vertical accuracy is calculated through comparison of lidar data against control points along the runway. Field calibration is performed on all flight lines to refine the IMU misalignment angles. IMU misalignment angles are calculated from the relative displacement of features within the overlap region of adjacent (and opposing) flight lines. The raw lidar data is reduced using the refined misalignment angles.

- 2017-01-08 00:00:00 - Classification Filters were applied to aid in the definition of terrain characteristics and to maintain ground. Filtering processes address aspects of the data such as; ground points, noise points, air points, low points, manmade features, vegetation, and overlap points. The Bare Earth surface was manually reviewed to ensure correct classification of Class 2 (Ground). Upon completion of bare earth review hydro-breaklines were generated through heads-up digitization. Ground (Class 2) Lidar points inside Inland Ponds and Lakes, and Inland Streams and Rivers were classified to Water (Class 9). A buffer of 2.3 feet was used around each hydro-flattened feature to classify Ground points (Class 2) to Ignored ground (Class 10). Island features were checked to ensure that Ground point (Class 2) remained classified as Ground. Ground points (Class 2) within 2.3 feet of breaklines, used to reduce triangulation between bridge decks were also classified to Ignored ground (Class 10). All bridge decks were classified to Bridge (Class 17). All remaining Points were filtered, or manually classified to their respective Point Classification; Processed (Class 1), Vegetation (Class 3), Low Noise (Class 7), High Noise (Class 18) Overlap data was identified using the Overlap Flag, LAS 1.4 specifications. All data was manually reviewed and any remaining artifacts removed. The bare-earth (Class 2 - Ground) lidar points underwent a manual QA/QC step to verify the quality of the DEM as well as a peer-based QC review. This included a review of the DEM surface to remove artifacts and ensure topographic quality. Classification of water (class 9) and ignored ground (class 10) was

completed via the use of the hydrologic breaklines collected for the hydro-flattening phase. Buildings (Class 6) was achieved via the used of digitized building footprints. The overlap classes were determined by first identifying the overlapping areas and reclassifying the LAS data by offset from a corridor. This allows the returns located on the edge of the swath to be removed from the bare earth coverage in an effort to produce a more uniform data density. The returns determined to be overlap including overlap default, ground, water, and ignored ground are then applied an overlap flag and reclassified to their respective standard classification value. The surveyed ground control points are used to make vertical adjustments to the data set and to perform the accuracy checks and statistical analysis of the lidar dataset. Supervisory QC monitoring of work in progress and completed editing ensured consistency of classification character and adherence to project requirements across the entire project area. The resulting deliverables for this task order consist of classified LAS file in LAS 1.4 format, Raw Swath LAS files in LAS 1.4 format, DEM and DSM files in Tiff format, 8-bit gray scale Intensity files in GeoTIFF format, Hydrologic and Bridge abutment breakline data in ESRI geodatabase format.

- The NOAA Office for Coastal Management (OCM) downloaded 3817 LA_Chenier_Plain_2017 laz files from this USGS site: ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elevation/LPC/Projects/USGS_LPC_LA_Chenier_Plain_2017_LAS_2018/. The data were in UTM Zone 15 North coordinates and NAVD88 (Geoid12B) elevations in meters. The data were classified as: 1 - Unclassified, 2 - Ground, 3 - Low vegetation (less than or equal to 3 meters), 7 - Low Noise, 9 - Water, 10 - Ignored Ground, 17 - Bridge Decks, 18 - High Noise. OCM processed all classifications of points to the Digital Coast Data Access Viewer (DAV). Classes available on the DAV are: 1, 2, 3, 7, 9, 10, 17, 18. OCM performed the following processing on the data for Digital Coast storage and provisioning purposes:

1. The LAStools software scripts lasinfo and lasvalidate were run on the laz files to check for errors.
2. An internal OCM script was run to check the number of points by classification and by flight ID and the gps and intensity ranges.
3. Internal OCM scripts were run on the laz files to convert from orthometric (NAVD88) elevations to ellipsoid elevations using the Geoid 12B model, to convert from NAD83 2011 UTM Zone 15 North coordinates in meters to geographic coordinates, to assign the geokeys, to sort the data by gps time and zip the data to database and to http.

5.1.1. If data at different stages of the workflow, or products derived from these data, are subject to a separate data management plan, provide reference to other plan:

5.2. Quality control procedures employed (describe or provide URL of description):

6. Data Documentation

The EDMC Data Documentation Procedural Directive requires that NOAA data be well documented,

specifies the use of ISO 19115 and related standards for documentation of new data, and provides links to resources and tools for metadata creation and validation.

6.1. Does metadata comply with EDMC Data Documentation directive?

No

6.1.1. If metadata are non-existent or non-compliant, please explain:

Missing/invalid information:

- 1.7. Data collection method(s)
- 3.1. Responsible Party for Data Management
- 4.1. Have resources for management of these data been identified?
- 4.2. Approximate percentage of the budget for these data devoted to data management
- 5.2. Quality control procedures employed
- 7.1. Do these data comply with the Data Access directive?
- 7.1.1. If data are not available or has limitations, has a Waiver been filed?
- 7.1.2. If there are limitations to data access, describe how data are protected
- 7.4. Approximate delay between data collection and dissemination
- 8.1. Actual or planned long-term data archive location
- 8.3. Approximate delay between data collection and submission to an archive facility
- 8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

6.2. Name of organization or facility providing metadata hosting:

NMFS Office of Science and Technology

6.2.1. If service is needed for metadata hosting, please indicate:

6.3. URL of metadata folder or data catalog, if known:

<https://www.fisheries.noaa.gov/inport/item/53710>

6.4. Process for producing and maintaining metadata

(describe or provide URL of description):

Metadata produced and maintained in accordance with the NOAA Data Documentation Procedural Directive: https://nosc.noaa.gov/EDMC/DAARWG/docs/EDMC_PD-Data_Documentation_v1.pdf

7. Data Access

NAO 212-15 states that access to environmental data may only be restricted when distribution is explicitly limited by law, regulation, policy (such as those applicable to personally identifiable information or protected critical infrastructure information or proprietary trade information) or by security requirements. The EDMC Data Access Procedural Directive contains specific guidance, recommends the use of open-standard, interoperable, non-proprietary web services, provides information about resources and tools to enable data access, and includes a Waiver to be submitted to justify any approach other than full, unrestricted public access.

7.1. Do these data comply with the Data Access directive?

7.1.1. If the data are not to be made available to the public at all, or with limitations, has a Waiver (Appendix A of Data Access directive) been filed?

7.1.2. If there are limitations to public data access, describe how data are protected from unauthorized access or disclosure:

7.2. Name of organization of facility providing data access:

NOAA Office for Coastal Management (NOAA/OCM)

7.2.1. If data hosting service is needed, please indicate:**7.2.2. URL of data access service, if known:**

<https://coast.noaa.gov/dataviewer/#/lidar/search/where:ID=8597>

https://coast.noaa.gov/htdata/lidar2_z/geoid12b/data/8597

7.3. Data access methods or services offered:

Data is available online for bulk and custom downloads.

7.4. Approximate delay between data collection and dissemination:

7.4.1. If delay is longer than latency of automated processing, indicate under what authority data access is delayed:

8. Data Preservation and Protection

The NOAA Procedure for Scientific Records Appraisal and Archive Approval describes how to identify, appraise and decide what scientific records are to be preserved in a NOAA archive.

8.1. Actual or planned long-term data archive location:

(Specify NCEI-MD, NCEI-CO, NCEI-NC, NCEI-MS, World Data Center (WDC) facility, Other, To Be Determined, Unable to Archive, or No Archiving Intended)

8.1.1. If World Data Center or Other, specify:**8.1.2. If To Be Determined, Unable to Archive or No Archiving Intended, explain:****8.2. Data storage facility prior to being sent to an archive facility (if any):**

Office for Coastal Management - Charleston, SC

8.3. Approximate delay between data collection and submission to an archive facility:

8.4. How will the data be protected from accidental or malicious modification or deletion prior to receipt by the archive?

Discuss data back-up, disaster recovery/contingency planning, and off-site data storage relevant to the data collection

9. Additional Line Office or Staff Office Questions

Line and Staff Offices may extend this template by inserting additional questions in this section.